

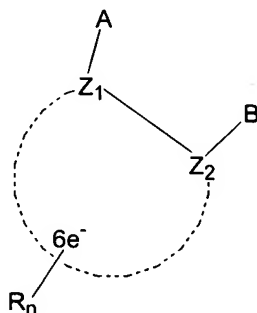
## REMARKS / ARGUMENTS:

Claims 104, 105, 107, 110, 111, 113 – 116, 118 – 134, 136, 137, 139, 141, 144 – 152 and 154 have been cancelled. These cancellations are made to facilitate prosecution. They do not signify agreement with or acquiescence in the positions taken by the Office and should not be construed to affect the patentability of the cancelled claims.

Claims 103, 108, 109, 135, 138 and 142 have been amended solely to facilitate prosecution.

Claim 103 has been amended to describe the plant that is not affected by Take-all disease as a bean that is a member of one of four genera and to narrow the description of the fungicide essentially to:

--- a fungicide having the formula



wherein  $Z_1$  and  $Z_2$  are C and are part of a thiophene ring;

A is --C(O)-amine;

B is --Q(R<sub>2</sub>)<sub>3</sub>;

Q is C, or Si;

n is 0, 1, or 2;

each R is independently selected from

a) halo, trimethylsilyl, and hydroxy;

b) C<sub>1</sub>-C<sub>4</sub> alkyl, each optionally substituted with halo, or hydroxy; and

c) C<sub>1</sub>-C<sub>4</sub> alkoxy, alkylthio, or alkylsulfinyl, each optionally substituted with halo;

each R<sub>2</sub> is independently alkyl, each optionally substituted with halogen; and

wherein, when Q is C, R<sub>2</sub> may also be selected from halo;

or an agronomic salt thereof, ---

The claim also is now limited to the feature wherein the plant or its propagation material possesses a transgenic event providing the plant with resistance to glyphosate and the treatment comprises foliar application of glyphosate.

Claims 108, 109 and 135 have been amended to comport with amendments made in claim 103.

Claim 138 has been amended by narrowing the possible substituents of the amine of the –C(O)-amine group.

Claim 142 has been amended to correct dependency.

Claims 103, 106, 108, 109, 112, 117, 135, 138, 140, 142, 143, 153 and 155 – 158 are pending.

No new matter has been added.

Restatement of final rejection dated 4/13/2007:

The Office's restatement of the grounds of rejection presented in the Office Action dated 4/13/2007 is acknowledged. Each of those grounds are specifically addressed below in view of the understandings gained in the interview of 4/29/2008.

Rejection of claims 103 – 104, 106, 108 – 110, 112 – 114, 116 – 118, 120, 122 and 134 – 158 under 35 USC §112, first paragraph, as lacking enablement for the full scope of the claims.

Claim 1 has been amended to a scope well short of that to which Applicant believes it is legally entitled solely in order to facilitate prosecution.

Claim 1 is now limited only to plants which are beans that are members of the genera *Vicia*, *Vigna*, *Glycine* and *Phaseolus*. The specification fully supports the inclusion of each of these genera (at pages 9, 10 and original claim 20) in the claimed method, and the examples shows evidence of the success of the claimed method with soybeans (*Glycine max*). All claimed plants are beans in the sub-family Faboideae and share significant common metabolic pathways. Due to the close generic relationship of the claimed plants, shared biological pathways, and evidence of success with soybeans, the ordinarily skilled practitioner would have a reasonable expectation that other members of the claimed genera would respond to the present method in the same

manner as soybeans. As all members of these four genera are well known to those in the art, no experimentation at all would be required for the selection of the claimed plant.

Claim 1 has also been amended to limit the herbicide only to glyphosate.

Furthermore, the generic structure of the fungicide described in claim 1 has been amended to a scope that now includes only a thiophene central ring having narrowly selected substituents, all of which are clearly described in the original specification and claims and which would be understood by the ordinarily skilled agricultural chemist to be logical expansions based on the structure of silthiofam, the successful use of which was shown in the Examples.

Consequently, the present claims can easily be practiced to their full scope by the ordinarily skilled practitioner without any undue experimentation.

For these reasons and for the reasons provided previously, which are reasserted here, the Applicants respectfully maintain that the present claims are fully enabled within the meaning of 35 U.S.C. §112 by the original disclosure and that the present ground of rejection must be reconsidered and withdrawn.

Rejection of claims 103 – 104, 106, 109, 110, 112 – 114, 116, 118 and 134 – 158 under 35 USC §103(a) over article by Roy *et al.*, in view of either U.S. Patent No. 5,486,621 to Phillion *et al.*, or U.S. Patent No. 5,994,270 to Phillion *et al.*, and further in view of U.S. Patent No. 5,914,451 to Martinell *et al.*, and U.S. Patent No. 6,277,847 to Theodoridis *et al.*

The Office has now maintained this ground of rejection through three Actions.

With respect, the Applicant maintains that the cited references fail to support a *prima facie* case of obviousness under 35 U.S.C. §103(a) for the reasons previously presented, all of which are reasserted here.

In brief, it is believed that the Office's argument, reduced to its essence, is: because of the teaching by Roy *et al.* that the presence of *G. graminis* (Gg) on soybeans having no indication of infection might cause a higher level of Gg infection of after-planted wheat (the extent of Roy's pertinent teaching), it would have been obvious to treat soybeans with silthiofam because treatment of soybeans that might harbor Gg

harmful to wheat might avoid Gg infection of wheat that might be planted after the beans.

Applicant reasserts that this reasoning fails to support a *prima facie* case of obviousness for several reasons, among them are: (1) the Office has cited no teaching that treatment of soybeans with silthiofam would have any effect on *G. graminis* on soybeans, also (2) the Office has cited no teaching that treatment of soybeans with silthiofam or any other pesticide has any effect on a subsequent crop, and (3) the Office has cited no teaching that treatment of soybeans with an agent having activity against *G. graminis* would be expected to affect the yield and/or the vigor of the soybeans. Each one of these steps would require significant research work to prove (as Roy *et al.* acknowledge for the first two), and evidence of that work, outside of the present specification, has not been cited by the Office.

Moreover, the Office has failed to find a suggestion in the prior art to limit the treated plant to one that possesses a transgenic event providing the plant with resistance to glyphosate and to apply the glyphosate to the foliage of the plant, as required in every amended claim. Without pointing out sources in the prior art for these necessary teachings, a *prima facie* case of obviousness under 35 USC §103(a) cannot be sustained.

Accordingly, it is respectfully requested that the present ground of rejection be reconsidered and be withdrawn.

Rejection of claims 108 and 117 as obvious under 35 USC §103(a) over article by Roy *et al.*, in view of either U.S. Patent No. 5,486,621 to Phillion *et al.*, or U.S. Patent No. 5,994,270 to Phillion *et al.*, and further in view of U.S. Patent No. 5,914,451 to Martinell *et al.*, and U.S. Patent No. 6,277,847 to Theodoridis *et al.*, and further in view of U.S. Patent No. 4,136,486 to Franklin, Jr. *et al.*

It is respectfully requested that the rejection of claims 108 and 117 as obvious under 35 USC §103(a) over article by Roy *et al.*, in view of either U.S. Patent No. 5,486,621 to Phillion *et al.*, or U.S. Patent No. 5,994,270 to Phillion *et al.*, and further in view of U.S. Patent No. 5,914,451 to Martinell *et al.*, and U.S. Patent No. 6,277,847 to

Theodoridis *et al.*, and further in view of U.S. Patent No. 4,136,486 to Franklin, Jr. *et al.*, be reconsidered for the reasons discussed below and be withdrawn.

Claims 108 and 117 depend ultimately from claim 103 and add the description that the seed is treated with an inoculant. Claim 108 further requires foliar treatment of the plant with the fungicide as well as foliar treatment with glyphosate. The Office has argued that Franklin Jr. *et al.* teach the use of an inoculant and that it would have been obvious to use the inoculants in the methods of Roy *et al.*, the Phillion *et al.* references, Martinell *et al.* and Theodoridis *et al.*, with the expectation of achieving improved growth in soybean plants.

As the Applicant has pointed out previously, the combination of Roy *et al.*, the Phillion *et al.* references, Martinell *et al.* and Theodoridis *et al.*, fails to provide a motivation or suggestion to increase the vigor and/or the yield of a leguminous plant by treating the plant or its propagation material with a fungicide of a specific composition which has no significant activity against fungal plant pathogens for the plant, wherein the plant or its propagation material possesses a transgenic event providing the plant with resistance to glyphosate and the treatment comprises foliar application of glyphosate, as required in the present claims. The Franklin Jr. *et al.* reference fails to add this required teaching.

Accordingly, it is respectfully requested that the present ground of rejection be reconsidered and be withdrawn.

Provisional rejection of claims 103, 104, 106, 108 – 110, 112 – 114, 116 – 118, 120, 122 and 134 – 158 under nonstatutory obviousness-type double patenting over claims 111 – 113, 115 – 117 and 122 – 125 of copending Application No. 11/138,965 as published in U.S. Patent Application Publication No. 2005/0233905.

Reconsideration of the provisional double patenting rejection (nonstatutory) of claims 103, 104, 106, 108 – 110, 112 – 114, 116 – 118, 120, 122 and 134 – 158, in view of claims 111 – 113, 115 – 117 and 122 – 125 of copending Application No. 11/138,965, as published in U.S. Patent Application Publication No. 2005/0233905, is respectfully requested for the reasons asserted in the Applicant's Response dated February 2, 2007.

After the withdrawal of the grounds of rejection discussed above, this double patenting rejection is the only rejection remaining in the present application and therefore, Applicants submit that this rejection should be withdrawn, consistent with the clear language of the MPEP.

Applicant's Comments on Response to Arguments:

The Office's Response to Arguments is acknowledged. Applicant wishes to comment specifically on the following points.

35 USC §112, first paragraph, lack of enablement.

The claims have been amended so that the full scope is now enabled by the specification and claims.

Sander's Declaration:

The Office states that the Declaration submitted by the Applicants under 37 CFR §1.132 on Feb. 5, 2007, cannot be used to show enablement because it contains data that were collected after the filing date of the application. Applicant maintains that this is an incorrect statement of law and requests correction or clarification by the Office. Applicant appreciated the concurrence of the Examiner with this position in the interview of April 29, 2008.

Obviousness rejection:

On page 20, the Office argues that, "Roy et al. teaches that their study indicates that there is reason to suspect that the inoculum of *G. graminis* may increase through its survival on soybean tissues ... and thus clearly teaches that the infection of soybean with *G. graminis* may be at least partially responsible for the heightened occurrence of take-all disease in subsequently planted wheat or cereal crop." (underlining added for emphasis).

The Office then concludes that in view of this teaching, one of ordinary skill "would have found it obvious to treat the soybeans taught by Roy et al. with a compound known to reduce *G. graminis* infection in plants, such as those taught by Phillion et al. [silthiofam] with the expectation of reducing the likelihood of infection of a subsequently planted wheat drop with the devastating take-all disease."

The Applicant maintains that the Roy *et al.* disclosure, even as characterized by the Office, fails to rise to the level of teaching necessary to support an obviousness rejection under §103. At most, one could argue that the Roy *et al.* reference may have suggested that it was obvious to try the approach urged by the Office, but as has recently been clarified by the Supreme Court, a teaching of "obvious to try" only supports an obviousness rejection under §103(a) "when there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, *KSR International Co. v. Teleflex, Inc. et al.*, 550 U.S. \_\_\_\_ (2007).

In the present case, the problem that needed solving was how to increase the yield and vigor of beans. Although there are a number of possible solutions to this problem in the prior art, none is even close to the solution described and claimed by the Applicants.

Indeed, even if the Office defines the "need to solve a problem" as being the need to protect wheat from take-all, there were not a "finite number of identified, predictable solutions" for this problem – in fact, there was only one – treat the wheat with a fungicide, such as silthiofam, having activity against *G. graminis*. Until the present specification, there was no indication at all that treatment of soybeans that were planted before wheat with silthiofam was an "identified" solution to this problem, nor that the results of such a treatment would give a "predictable" result. Accordingly, the Roy *et al.* disclosure fails to provide support for an obviousness rejection even under the "obvious to try" criterion as clarified by *KSR*.

#### Double patenting rejections:

The Office has issued numerous new rejections on the grounds of double patenting. Each of the grounds of rejection repeats the same reasoning. Namely, that both the [patent serving as the basis for the rejection] and the present invention claim a method of applying to plants/crops the instant thiophene compounds in order to control disease. The [patent serving as the basis for the rejection] claims that the disease controlled is caused by *Gaeumannomyces* sp., whereas instant claims are to the control of an agronomic plant that is not affected by Take-all disease. The control of

Gaeumannomyces sp. makes the Take-all disease obvious since the control of Gaeumannomyces sp. is directed to Take-all disease.

The present claims are not drawn to a method of controlling disease, but to a method of increasing the yield and vigor of a plant. In fact, the present claims are limited to the treatment of plants that are not affected by take-all disease or *G. graminis*, while the claims of the cited patents are directed to plants that are affected by take-all disease. Accordingly, the knowledge that silthiofam could be applied to plants to control *G. graminis*, and take-all disease, is irrelevant regarding the obviousness of using the compound to increase yield and vigor in plants not susceptible to take-all disease, as presently claimed.

Specific double patenting grounds are based on the following patents:

5,811,411

Claims 1 – 34 are drawn to "A method of controlling disease in a plant caused by Gaeumannomyces sp. comprising applying to the plant locus ... [a fungicide having the general formula of silthiofam]." Claim 34 – 62 are drawn to a compound.

5,994,270

Claims 1 – 21 are drawn to "A method of controlling disease in a plant caused by Gaeumannomyces sp. in said plant comprising applying to the seed or the soil of said plant a fungicidally effective amount of [a fungicide having the general formula of silthiofam]."

Claims 22 – 43 are drawn to a compound.

5,834,447

Claims 1 – 12 are drawn to "A method of controlling disease in a plant caused by Gaeumannomyces sp. comprising applying to the plant locus a fungicidally effective amount of [a fungicide having the general formula of silthiofam]."

Claims 13 – 27 are drawn to a compound.

5,705,513

Claims are drawn to methods and compounds having a pyridine central ring.

5,693,667

Claims are drawn to methods and compounds having a furan central ring.

5,849,723



Claims are drawn to methods and compounds having a benzene central ring.

5,498,630

Claims are drawn to methods and compounds having a benzothiophene central ring.

5,486,621

Claims 1 – 3 are drawn to a compound or composition

Claims 3 – 7 are drawn to "A method of controlling disease in a plant caused by *Gaeumannomyces* species which comprises applying an effective amount of [silthiofam]."

7,098,170

Claim 5 is drawn to "A method of increasing the vigor and/or the yield of an agronomic plant comprising treating the plant or its propagation material with an effective amount of a triazole fungicide selected from [ a group of triazole fungicides], or a strobilurin fungicide" in combination with silthiofam, and planting the treated propagation material and/or growing the treated plant in the absence of pest pressure by fungal plant pathogens against which the triazole, or strobilurin type fungicide is known to be active, and thereby increasing the vigor and/or the yield of the plant.

Claim 41 is drawn to "A method of increasing the vigor and/or the yield of an agronomic plant comprising treating the plant or its propagation material with a silthiofam-type fungicide and an effective amount of a triazole fungicide, or a strobilurin fungicide; and planting the treated propagation material and/or growing the treated plant in the absence of pest pressure by fungal plant pathogens against which the triazole, or strobilurin type fungicide is known to be active, and thereby increasing the vigor and/or the yield of the plant."

Accordingly, these claims teach the use of silthiofam in combination with other specific fungicides and cannot teach or suggest the use of silthiofam alone to increase the yield and vigor of beans.

6,992,047

The claims are drawn to "A method of producing a controlled release form of a first agricultural active wherein the first agricultural active has low water solubility and a normal melting point above about 80°C..." Silthiofam is one of the possible agricultural

actives. There is no teaching or suggestion of the use of silthiofam to increase the yield or vigor of beans.

U.S. Patent Application Publication No. 2004/0023802

The claims in this application are drawn (in part) to a method of increasing the yield and/or vigor of an agronomic plant grown from a seed by (a) determining whether the seed is to be planted in a location having a level of insect pest infestation that would indicate treatment with an insecticide; and, if such treatment is not indicated, (b) treating the seed with a neonicotinoid compound. The use of a silthiofam fungicide is not a feature of the claims. The meaning of the Office's mention of the compound "simeconazole" as a "thiophene compound" is not understood and clarification is requested.

Use of a neonicotinoid insecticide does not teach or suggest the use of a silthiofam-type fungicide.

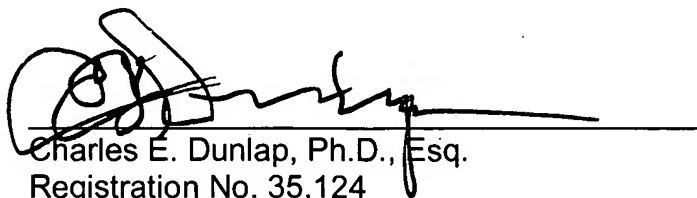
Request for reconsideration:

It is respectfully requested that the claims be reconsidered after consideration of the reasons for allowability that are discussed above and be found to be allowable. If one or more of the claims are found to not be allowable, a telephone call to the undersigned would be appreciated in order to resolve any remaining issues.

Respectfully submitted,

**Nelson Mullins Riley & Scarborough, LLP**

Dated: June 4, 2008

A handwritten signature in black ink, appearing to read 'Charles E. Dunlap', is written over a horizontal line.

Charles E. Dunlap, Ph.D., Esq.  
Registration No. 35,124  
1320 Main Street, 17<sup>th</sup> Floor  
Columbia, SC 29201  
Telephone: (864) 250-2238  
Facsimile: (803) 255-9831  
Customer No. 45850